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P#9

RAW SEQUENCE LISTING  
PATENT APPLICATION: US/09/497, 967

DATE: 08/15/2001  
TIME: 09:27:50

Input Set : A:\23500170101.txt.APP  
Output Set: N:\CRF3\08132001\I497967.raw

3 <110> APPLICANT: Clark, Theodore G.  
 4       Dickerson, Jr., Harry W.  
 5       Lin, Tian-Long  
 7 <120> TITLE OF INVENTION: DIAGNOSTIC AND PROTECTIVE ANTIGEN GENE SEQUENCES OF  
 8       ICHTHYOPHTHIRIUS  
 10 <130> FILE REFERENCE: 235.00170101  
 12 <140> CURRENT APPLICATION NUMBER: 09/497, 967  
 13 <141> CURRENT FILING DATE: 2000-02-04  
 15 <150> PRIOR APPLICATION NUMBER: 60/131, 121  
 16 <151> PRIOR FILING DATE: 1999-04-27  
 18 <150> PRIOR APPLICATION NUMBER: 60/118, 634  
 19 <151> PRIOR FILING DATE: 1999-02-04  
 21 <150> PRIOR APPLICATION NUMBER: 60/122, 372  
 22 <151> PRIOR FILING DATE: 1999-03-02  
 24 <150> PRIOR APPLICATION NUMBER: 60/124, 905  
 25 <151> PRIOR FILING DATE: 1999-03-17  
 27 <160> NUMBER OF SEQ ID NOS: 102  
 29 <170> SOFTWARE: PatentIn Ver. 2.1  
 31 <210> SEQ ID NO: 1  
 32 <211> LENGTH: 1326  
 33 <212> TYPE: DNA  
 34 <213> ORGANISM: Ichthyophthirius multifiliis  
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 39 ctggtaattt gtgttaattt cagacctaatt ttttactata atgggtggtc tgcttaagga 180  
 40 gaagctaattt gtaatttacc tttcgcagca aataatgctg cttagaggat atgtgtacca 240  
 41 tgccaaataaa acagagtagg ctctgttacc aatgcaggtg acttagctac ttttagccaca 300  
 42 taatgcagta cttaatgtcc tactggcaact gcacttgcatt atggagtgc agatgtttt 360  
 43 gatacatcgccatataatg tgtaatgc aaacctaact ttactataa tgggtggttct 420  
 44 ccttaaggta aagctcctgg cgtttaagg ttgtgtctg gtgctgccgc tgcaagggttt 480  
 45 gctgccgtta ctgttaatg ttttttttttcaactaaaca aaaacgatttcccttccact 540  
 46 gcaaggccat aagcttaattt agccacataaa tgtagcaatt aatgtcctac tggcactgt 600  
 47 ctgtatgtat gaggacact tgtttttaat acatcagcca cattatgtgt taaatgcaga 660  
 48 cctaactttt actataatgg tggttctctt taaggtaag ctcctggcgt ttaatgtttt 720  
 49 gctgctggta ctgcccgtgc aggtgttgc gccgttacta gttatgtgtt accttgcac 780  
 50 ataaacaaaa acgattctcc tgccactgca ggtgcctaaatgttgc cacaatgc 840  
 51 agtacttaat gtccaaactgg cactgcaattt caagacggag tgacacttgtt ttttagtaat 900  
 52 tcatccacat aatgttctta atgcattgtt aattactttt ttaatggtaa tttcgaagca 960  
 53 ggtaaaaggta aatgtttaaa gtgtccagta agtaaaacta ctccagcaca tgctccagg 1020  
 54 aatactgcta cttaaaggccat ataaatgttgc accacatgtc ctgctggta agtacttgt 1080  
 55 gatggaaacat caactaattt tgtagcttcc gcaactgaat gtactaaatg ttctgctggc 1140  
 56 ttttttgcatt caaaaacaac tggtttaca gcaggtactg atacatgtac tgaatgtact 1200  
 57 aaaaaattaa cttctggta cacaatgttgc gttatgtgtt aagctactca aaaagtataa 1260  
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 64 <212> TYPE: DNA  
 65 <213> ORGANISM: Ichthyophthirius multifiliis  
 67 <400> SEQUENCE: 2  
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 69 tttaataaaa ttataaaaaa taaaaagttag aaaaatatca ataataaaaat ataaaataaa 120  
 70 tttaaaaatt atttatgatt tgTTTTAGA aaataaggTT ttatTTATAA taatgaattc 180  
 71 tttaaaaataat gaatcgatat tataAAattt tttttttt ataaaatattt gaattaccta 240  
 72 aaataatata aatttatgaa atattatTTT aaataataag ttatagaata aatttatttt 300  
 73 tatttctaat ttTTTTATA attttaaaa aaaaaaaaaa aatctattac tattttgcat 360  
 74 ttacaaacga tagaaaaaaac taaaatttT aatattatta aaaaaaaaaa tataaataat 420  
 75 aataataaaa atatgaaata taatatTTT ttaattttaa ttatTTCTT atttatttaat 480  
 76 gaattaagag ctgttccatg tcctgatggT acttagactc aagctggatt gactgatgt 540  
 77 ggtgctgctg atcttggTAC ttgtgttaat tgcagaccta attttacta taatgggt 600  
 78 gctgcttaag gagaagctaa tggtaattaa ctttgcag caaataatgc tgctagaggt 660  
 79 atatgtgtac catgccaat aaacagagta ggctctgtta ccaatgcagg tgacttagct 720  
 80 acttttagcca cataatgcag tacttaatgt cctactggca ctgcacttga tgatggagtg 780  
 81 acagatgtt ttgatagatc agccgcataa tggTTAAAT gcaaaccta ctTTTactat 840  
 82 aatggtggtt ctccttaagg tgaagctct ggCGTTAAG ttttgcTgc tggTgTgCc 900  
 83 gctgcaggTg ttgctgcccgt tacttagTTA tggTACCTT gccaactaaa caaaaacgt 960  
 84 tctcctgcca ctgcaggTgc ctaagctaat ttggccacat aatgtgacaa ttaatgtcct 1020  
 85 actggcactg tacttgatga tggagtgaca ctgttttta atacatcagc cacattatgt 1080  
 86 gttaaatgca gacctaactt ttactataat ggtggTTCTC cttaaaggTga agctcctggc 1140  
 87 gtttaagttt ttgctgctgg tgctgcccgt gcaggTgttgc tgccgttac tagttatgt 1200  
 88 gtaccttgcc aaataaaaca aaacgattct cctgcccactg caggtgccta agctaattt 1260  
 89 gccacataat gcagTactta atgtccaaCTT ggcactgca ttcaagacgg agtgcacatt 1320  
 90 gtttttagta attcatccac ataatgttct taatgcattt ctaattactt ttttaatgg 1380  
 91 aatTTcgaag caggtaaaag ttaatgttta aagtgtccag taagtaaaaac tactccagca 1440  
 92 catgctccag gtaatactgc tacttaagcc acataatgtt tgaccacatg tcctgctgg 1500  
 93 acagTacttg atgatggAAC atcaactaat ttgttagctt ccgcaactga atgtactaaa 1560  
 94 tggTCTGCTG gctttttgc atcaaaaaaca actggTTTA cagcaggTac tgatacatgt 1620  
 95 actgaatgtt ctaaaaaattt aacttctgtt gcccacgcta aagtataatgc tgaagctact 1680  
 96 caaaaagtat aatgcgcctc cactacttgc gctaaatttt tattcatttc cttattattt 1740  
 97 atttcttctt atttattgtt atgaataaaa taattcatat tattttattt ttttattttt 1800  
 98 tggTTataaa ttaaaaataa gataaaaattt aaaaataattt ttttataaa 1860  
 99 attatcaattt aacaactaac taacaaaata caattaaaat ctttataagaa ggTTTTCTT 1920  
 100 tataatattt taaggattaa ttacaaattt ttaatTTA taacattttt tcattttttt 1980  
 101 tcttattttttaa ataaatacat aaattctagt tgattttttt ttaatTTTTA tttttttttt 2040  
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 103 taatttaata ttatTTTATt ttatTTTCA tattttttt atcaaactttt taaaactaaa 2160  
 104 aattttattaa gtctaaTTTAA aactatataattt attatattttt ttgttattct tttttttttt 2220  
 105 cataatcata aatacagaat ttTTTatTTT ttgagTTGtG cataattttt tattttttttt 2280  
 106 atcacttata tatgcgtatg taattttattt tatTCattc agggcttaag cttgtaaaat 2340  
 107 ataataattt aataatTTTt ttaaggggaaa ggttaggcaaa actaaactaa atttttttac 2400  
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 112 <210> SEQ ID NO: 3  
 113 <211> LENGTH: 1404  
 114 <212> TYPE: DNA

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115 <213> ORGANISM: Ichthyophthirius multifiliis  
 117 <400> SEQUENCE: 3  
 118 atgaaaaata atattttagt aatattgatt atttcattat ttatcaatta aattaaatct 60  
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 120 cctgaaatt gtgttaattt ttagaaaaac ttttattata ataatgtgc tgctttcgTT 180  
 121 cctgggtcta gtacgtgtac accttgcTCA taaaaaaaaaag atgctggTc ttaaccaaAT 240  
 122 ccacctgcta ctgctaattt agtcacataa tgtaacgtta aatgcctgc tggTaccgca 300  
 123 attgcaggTg gagcaacaga ttatgcagca ataatcacag aatgtgtta ttgtagaatt 360  
 124 aatttttata atgaaaatgc tccaaatttt aatgcaggTg ctgtacatg cacagcttgc 420  
 125 ccggtaaaaca gagttggTgg tgcatgtact gctggtaatg ccgctaccat agtgcataa 480  
 126 tgtaacgtcg catgtcctac tggTactgca cttgtatgtg gagtaactac tgattatgtt 540  
 127 agatcattca cagaatgtgt taaatgtaga cttaactttt actataatgg taataatgg 600  
 128 aatactcctt tcaatccagg taaaagttaa tgcacacctt gtccggcaat taaacctgct 660  
 129 aatgttgctt aagctacttt aggtaatgtat gctacaataa ccgcataatg taacgttgca 720  
 130 tgccctgatg gtactataag tgctgctggA gtaaataattt gggtagcaca aaacactgaa 780  
 131 tggTactaattt gtgctcctaa ctTTTacaat aataatgtc ctaatttcaa tccaggtaaat 840  
 132 agtacatgcc taccttgcCC agcaaataaa gattatggTg ctgaaggccac tgcaggTgg 900  
 133 gcccgtactt tagccaaata atgtaatattt gcatgcccTg atggTactgc aattgttagt 960  
 134 ggagcaacta attatgtataattt attataaaca gaatgtctaa attgtgctgc taactttat 1020  
 135 tttgatggta ataatttcta ggcaggaaatg agtagatgc aagcatgtcc agcaaataaa 1080  
 136 gtttaaggcg ctgtagcaac tgcatggTggT actgtacttt taattgtcata atgtgccctt 1140  
 137 gaatgcccTg ctggTactgt actcaccgat ggaacaacat ctacttataa ataagcagca 1200  
 138 tctgaatgtg ttaaatgtgc tgccaaCTTT tataactaca aataaactga ttggtagca 1260  
 139 ggtattgata catgtacttag ttgtataaaa aaattaactt ctggcgtgA agctaattt 1320  
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 145 <211> LENGTH: 100  
 146 <212> TYPE: DNA  
 147 <213> ORGANISM: Ichthyophthirius multifiliis  
 149 <400> SEQUENCE: 4  
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 151 ttatcgatt tccttattat ttatttctt ctatttattt 100  
 154 <210> SEQ ID NO: 5  
 155 <211> LENGTH: 1404  
 156 <212> TYPE: DNA  
 157 <213> ORGANISM: Artificial Sequence  
 159 <220> FEATURE:  
 160 <223> OTHER INFORMATION: Description of Artificial Sequence: synthetic  
 161 55kD i-antigen coding region  
 163 <400> SEQUENCE: 5  
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 165 gctaactgtc ctgttggAAC cgagaccaac accgctggac aggtggacga cctgggaacc 120  
 166 cctgctaact gtgtgaactg tcagaagaac ttctactaca acaacgtgc tgctttcgTg 180  
 167 cctggagctt ctacctgtac cccttgcTCT cagaagaagg acgctggagc tcagcctaAC 240  
 168 cctcctgcta ccgctaacctt ggtgacccag tgtaacgtga agtgcctgc tggAACCGCT 300  
 169 atcgctggag gagctaccga ctacgtgtct atcatcaccg agtgtgtgaa ctgtcgcatac 360  
 170 aacttctaca acgagaacgc tcctaaCTTC aacgctggag ctTctacTg taccgcttgc 420  
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172 tgtaacgtgg cttgtctac cggaccgct ctggacgacg gagtgaccac cgactacgtg 540  
 173 cgctttca ccgagtgtgt gaagtgtcgc ctgaacttct actacaacgg aaacaacgga 600  
 174 aacaccctt tcaaccctgg aaagtctcaag tgtacccctt gtcctgctat caagcctgct 660  
 175 aacgtggctc aggctaccctt gggaaacgac gctaccatca ccgctcagtg taacgtggct 720  
 176 tgcctgacg gaaccatctc tgctgctggta gtgaacaact gggtggtca gaacaccgag 780  
 177 tgtaccaact gtgctcctaa cttctacaac aacaacgctc ctaacttcaa ccctggaaac 840  
 178 tctacctgtc tgcctgtcc tgctacaacaag gactacggag ctgaggctac cgctggagga 900  
 179 gctgctaccc tggctaagca gtgtaacatc gcttgctctg acggaaccgc tategcttct 960  
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 181 ttcgacggaa acaacttcca ggctggatct tctcgctgtc aggcttgcc tgctaacaag 1080  
 182 gtgcagggag ctgtggctac cgctggagga accgctaccc tgatcgctca gtgtgctctg 1140  
 183 gagtgccctg ctggaaccgt gctgaccgac ggaaccacct ctacctacaa gcaggctgct 1200  
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 185 gaaatcgaca cctgtacctc ttgtaacaag aagctgaccc ctggagctga ggctaaccctg 1320  
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 191 <211> LENGTH: 442  
 192 <212> TYPE: PRT  
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 195 <400> SEQUENCE: 6  
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 197 1 5 10 15  
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 200 20 25 30  
 202 Leu Thr Asp Val Gly Ala Ala Asp Leu Gly Thr Cys Val Asn Cys Arg  
 203 35 40 45  
 205 Pro Asn Phe Tyr Tyr Asn Gly Gly Ala Ala Gln Gly Glu Ala Asn Gly  
 206 50 55 60  
 208 Asn Gln Pro Phe Ala Ala Asn Ala Ala Arg Gly Ile Cys Val Pro  
 209 65 70 75 80  
 211 Cys Gln Ile Asn Arg Val Gly Ser Val Thr Asn Ala Gly Asp Leu Ala  
 212 85 90 95  
 214 Thr Leu Ala Thr Gln Cys Ser Thr Gln Cys Pro Thr Gly Thr Ala Leu  
 215 100 105 110  
 217 Asp Asp Gly Val Thr Asp Val Phe Asp Arg Ser Ala Ala Gln Cys Val  
 218 115 120 125  
 220 Lys Cys Lys Pro Asn Phe Tyr Tyr Asn Gly Gly Ser Pro Gln Gly Glu  
 221 130 135 140  
 223 Ala Pro Gly Val Gln Val Phe Ala Ala Gly Ala Ala Ala Gly Val  
 224 145 150 155 160  
 226 Ala Ala Val Thr Ser Gln Cys Val Pro Cys Gln Leu Asn Lys Asn Asp  
 227 165 170 175  
 229 Ser Pro Ala Thr Ala Gly Ala Gln Ala Asn Leu Ala Thr Gln Cys Ser  
 230 180 185 190  
 232 Asn Gln Cys Pro Thr Gly Thr Val Leu Asp Asp Gly Val Thr Leu Val  
 233 195 200 205  
 235 Phe Asn Thr Ser Ala Thr Leu Cys Val Lys Cys Arg Pro Asn Phe Tyr  
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238 Tyr Asn Gly Gly Ser Pro Gln Gly Glu Ala Pro Gly Val Gln Val Phe  
 239 225 230 235 240  
 241 Ala Ala Gly Ala Ala Ala Gly Val Ala Ala Val Thr Ser Gln Cys  
 242 245 250 255  
 244 Val Pro Cys Gln Ile Asn Lys Asn Asp Ser Pro Ala Thr Ala Gly Ala  
 245 260 265 270  
 247 Gln Ala Asn Leu Ala Thr Gln Cys Ser Thr Gln Cys Pro Thr Gly Thr  
 248 275 280 285  
 250 Ala Ile Gln Asp Gly Val Thr Leu Val Phe Ser Asn Ser Ser Thr Gln  
 251 290 295 300  
 253 Cys Ser Gln Cys Ile Ala Asn Tyr Phe Phe Asn Gly Asn Phe Glu Ala  
 254 305 310 315 320  
 256 Gly Lys Ser Gln Cys Leu Lys Cys Pro Val Ser Lys Thr Thr Pro Ala  
 257 325 330 335  
 259 His Ala Pro Gly Asn Thr Ala Thr Gln Ala Thr Gln Cys Leu Thr Thr  
 260 340 345 350  
 262 Cys Pro Ala Gly Thr Val Leu Asp Asp Gly Thr Ser Thr Asn Phe Val  
 263 355 360 365  
 265 Ala Ser Ala Thr Glu Cys Thr Lys Cys Ser Ala Gly Phe Phe Ala Ser  
 266 370 375 380  
 268 Lys Thr Thr Gly Phe Thr Ala Gly Thr Asp Thr Cys Thr Glu Cys Thr  
 269 385 390 395 400  
 271 Lys Lys Leu Thr Ser Gly Ala Thr Ala Lys Val Tyr Ala Glu Ala Thr  
 272 405 410 415  
 274 Gln Lys Val Gln Cys Ala Ser Thr Thr Phe Ala Lys Phe Leu Ser Ile  
 275 420 425 430  
 277 Ser Leu Leu Phe Ile Ser Phe Tyr Leu Leu  
 278 435 440  
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 282 <211> LENGTH: 468  
 283 <212> TYPE: PRT  
 284 <213> ORGANISM: Ichthyophthirius multifiliis  
 286 <400> SEQUENCE: 7  
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 290 Gln Ile Lys Ser Ala Asn Cys Pro Val Gly Thr Glu Thr Asn Thr Ala  
 291 20 25 30  
 293 Gly Gln Val Asp Asp Leu Gly Thr Pro Ala Asn Cys Val Asn Cys Gln  
 294 35 40 45  
 296 Lys Asn Phe Tyr Tyr Asn Asn Ala Ala Ala Phe Val Pro Gly Ala Ser  
 297 50 55 60  
 299 Thr Cys Thr Pro Cys Pro Gln Lys Lys Asp Ala Gly Ala Gln Pro Asn  
 300 65 70 75 80  
 302 Pro Pro Ala Thr Ala Asn Leu Val Thr Gln Cys Asn Val Lys Cys Pro  
 303 85 90 95  
 305 Ala Gly Thr Ala Ile Ala Gly Gly Ala Thr Asp Tyr Ala Ala Ile Ile  
 306 100 105 110  
 308 Thr Glu Cys Val Asn Cys Arg Ile Asn Phe Tyr Asn Glu Asn Ala Pro  
 309 115 120 125

VERIFICATION SUMMARY  
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